

LISTING OF CLAIMS:

1-6 (Canceled)

7. (Currently amended) A starter comprising:

a starting motor for generating rotation force;

a pinion shaft rotatable by the starting motor and supported slidably in an axial direction, the pinion shaft having a recess on an outer periphery of a front end portion thereof and a step on the outer periphery thereof;

a pinion fitted on the pinion shaft in a rotation-restricted manner relative to the pinion shaft and movable forward integrally with the pinion shaft, wherein the pinion has a front end surface and a rear end surface, wherein the front end surface is further from the motor than the rear end surface and the rear end surface adjacently faces the step in the axial direction;

a restricting member fitted in the recess in front of the pinion in an axial direction to receive the front end surface of the pinion; and

a pressing member disposed between the pinion and the step of the pinion shaft for pressing the pinion toward the restricting member relative to the pinion shaft, wherein the pinion is movable toward the step of the pinion shaft while compressing the pressing member up to a position at which the rear end surface of the pinion and the step of the pinion shaft come into direct contact with each other.

8. (Original) The starter as in claim 7, further comprising:

a cover for restricting the restricting member from disengaging radially outward from the pinion shaft when the pinion shaft is rotated by the starting motor.

9. (Original) The starter as in claim 8, wherein:

the cover is provided at a front end portion of the pinion shaft and fixed to the pinion to surround an outer periphery of the restricting member.

10. (Currently amended) A pinion configuration for a starter comprising:

a rotatable pinion shaft slidably supported in an axial direction and having a first end and a second end, the second end having a step on an outer periphery thereof, the step having a wall rising from the outer periphery of the pinion shaft in a ~~radial~~radial direction;

a pinion fitted on the second end of the pinion shaft in front of the step in the axial direction, wherein the pinion has a front end surface and a rear end surface, the rear end surface being opposite to the front end surface and adjacently facing the rising wall of the step in the axial direction; and

a pressing member disposed between a rear end portion of the pinion and the rising wall of the step, wherein the pressing member normally presses the pinion in a direction away from the first end of the pinion shaft, and wherein the rear end surface of the pinion is brought into contact with the rising wall of the step while compressing the pressing member when the pinion ~~meshes with~~contacts a ring gear for starting an engine.

11. (Previously presented) The starter pinion configuration according to claim 10, further comprising a restricting member fitted on the second end of the pinion shaft in front of the pinion, wherein the front end surface of the pinion is in press-contact with the restricting member by the pressing member.

12. (Previously presented) The starter pinion configuration according to claim 10, wherein the pressing member includes a spring, and a first end of the spring is connected to the rear end portion of the pinion and a second end of the spring is connected to the rising wall of the step.

13. (Currently Amended) The pinion configuration according to claim 11, further comprising a starting motor for generating a rotation force for rotating the pinion shaft, wherein the restricting member presses the pinion toward the motor.

14. (Canceled)

15. (Previously presented) The stator according to claim 7, wherein an outer peripheral portion of the rear end surface of the pinion protrudes toward the step in the axial direction for defining a chamber in an inner periphery of the pinion, and the pressing member is housed in the chamber.

16. (Previously presented) The stator according to claim 15, wherein the pressing member includes a spring, wherein a front end of the spring is in contact with an inner peripheral portion of the rear end surface of the pinion, which defines a front end of the chamber, and a rear end of the spring is in contact with the step.

17. (Previously presented) The stator according to claim 7, wherein the pinion is connected with the pinion shaft through splines.

18. (Currently amended) The stator according to claim 15, wherein the rear end surface of the pinion and a rear end of the pressing member are brought into contact with the step before the pressing member is completely compressed when the pinion ~~meshes with~~contacts a ring gear.

19. (New) The starter according to claim 7, wherein the pinion has teeth axially extending within an axial range between the front end surface and the rear end surface of the pinion, and no part of the pinion is located radially outside of the step.

20. (New) The starter according to claim 7, wherein the step is defined on the pinion shaft between a smaller diameter portion of the pinion shaft and a greater diameter portion of the pinion shaft, wherein the smaller diameter portion is located on an end of the pinion shaft, and the pinion is only located outside the smaller diameter portion, and no part of the pinion is movable on the greater diameter portion beyond the step.

21. (New) The starter according to claim 7, wherein:

the step is defined on the pinion shaft between a smaller diameter portion of the pinion shaft and a greater diameter portion of the pinion shaft;

the smaller diameter portion is located on an end of the pinion shaft;

the pinion is only located outside the smaller diameter portion;

a chamber is formed in an inner surface of the pinion for housing the pressing member;

and

an inside diameter of the pinion, where the chamber is formed, is smaller than the outside diameter of the greater diameter portion of the pinion shaft.

22. (New) The starter according to claim 10, wherein the pinion has teeth axially extending within an axial range between the front end surface and the rear end surface of the pinion, and no part of the pinion is located radially outside of the step.

23. (New) The starter according to claim 10, wherein the step is defined on the pinion shaft between a smaller diameter portion of the pinion shaft and a greater diameter portion of the pinion shaft, wherein the smaller diameter portion is located on an end of the pinion shaft, and the pinion is only located outside the smaller diameter portion, and no part of the pinion is movable on the greater diameter portion beyond the step.

24. (New) The starter according to claim 10, wherein:

the step is defined on the pinion shaft between a smaller diameter portion of the pinion shaft and a greater diameter portion of the pinion shaft;

the smaller diameter portion is located on an end of the pinion shaft;

a chamber, which is adjacent to the rear end surface of the pinion, is formed between an inner surface of the pinion and the pinion shaft for housing the pressing member;

an inside diameter of the pinion, where the chamber is formed, is smaller than the outside diameter of the greater diameter portion of the pinion shaft;

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the pinion is located on the smaller diameter portion and is movable toward the step while compressing the pressing member, and

the rear end surface of the pinion is brought into contact with the rising wall of the step before the pressing member is completely compressed.

REMARKS

The applicants filed a form PTO-1449 with the original application on 16 October 2003. A copy of this form was returned with the first office action of 28 June 2002. However, the examiners initials appeared next to only one of the two references that were cited on the form PTO-1449. US Patent 4,962,340 to Isozumi was not initialed. Therefore, the applicants filed a Request for Return of Initialed Form PTO-1449 on 26 September 2002. Enclosed with that request was the form PTO-1449 that had no initials next to US Patent 4,962,340 to Isozumi. As of this date, the applicants have not received a return copy of that form. Subsequently, in the remarks of the amendment filed on 17 March 2003, the applicants reminded the examiner that the record fails to show that US Patent 4,962,340 to Isozumi has been considered. That reminder did not result in the return of an initialed copy of form PTO-1449 to the applicants. Therefore, the applicants again respectfully request a copy of the form PTO-1449 that has the examiners initials next to US Patent 4,962,340 to Isozumi. Since two copies of that form have already been supplied, no copy is now being enclosed. However, if the examiner needs a copy of form PTO-1449, the undersigned will have a copy sent by facsimile upon request.

Claims 7-13 and 15-24 are pending. Claims 1-6 and 14 have been canceled. Claims 19-24 are new. The applicants respectfully request reconsideration and allowance of this application in view of the above amendments and the following remarks.

Claims 7-9 and 15-18 are rejected under 35 USC 103(a) as being unpatentable over the Japanese publication to Tajima (JP-11-280624) in view of the patent to Isozumi (5052235). The Tajima publication describes an arrangement of a pinion 26 relative to a sleeve 25 in paragraphs 0028 and 0029. A machine translation of the Tajima reference is attached. However, as recognized in the office action, the Tajima reference fails to disclose a pressing member. Although the Tajima reference discloses a step 25a on the sleeve 25, it fails to disclose whether the pinion 26 is normally held in a loose manner or whether the pinion 26 is tightly held by a C-clip 143. In either case the device of the Tajima reference fails to adequately reduce shock.

The patent to Isozumi shows a compression spring 14, which apparently reduces shock when the pinion 10 contacts a ring gear; however, the Isozumi '235 patent fails to disclose contact between the pinion 10 and a step of the pinion shaft 5.

Claim 7 recites, among other things, the following:

"... the pinion is movable toward the step of the pinion shaft while compressing the pressing member up to a position at which the rear end surface of the pinion and the step of the pinion shaft come into direct contact with each other. . . "

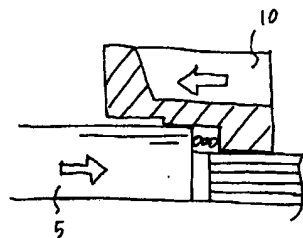
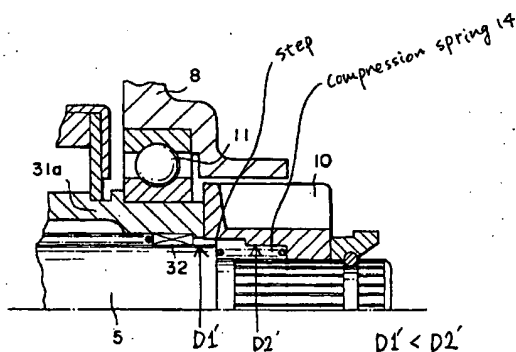
Since the patent to Isozumi fails to disclose or suggest the claimed contact between the step and the pinion, the combination of the patent to Isozumi and the Tajima reference fails to meet the limitations of claim 7 and its dependents.

Similarly, claim 10 recites the following:

"...the rear end surface of the pinion is brought into contact with the rising wall of the step while compressing the pressing member when the pinion contacts a ring gear for starting an engine . . . "

Since the patent to Isozumi fails to disclose or suggest the claimed contact between the step and the pinion, the combination of the patent to Isozumi and the Tajima reference fails to meet the limitations of claim 10 and its dependents.

With reference to the diagrams below, note that the inside diameter of the pinion 10, where the spring is housed, is greater than the outside diameter of the pinion shaft 5. Thus, the pinion cannot make contact with the step of the pinion shaft 5 even if the spring 14 is fully compressed. The axial movement of the pinion 10 relative to the pinion shaft 5 is restricted by the spring 14. In such a construction, the pinion 10 is not supported in a stable manner. Further, in a structure like that of the Isozumi '235 patent, since the pinion slides over the step and a greater diameter part of the pinion shaft, as shown in the diagram on the right, the pinion shaft is likely to interfere with the movement of the pinion 10, especially if foreign matter comes between them. The diagrams below are based on the drawings in the Isozumi '235 patent.



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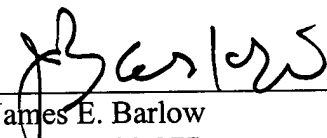
Claims 19-24 are new. Claims 19-21 depend on claim 7 and are believed to be in condition for allowance for the reasons given above for the patentability of claim 7.

Claims 22-24 depend on claim 11 and are believed to be in condition for allowance for the reasons given above for the patentability of claim 11.

In view of the forgoing, the applicants respectfully submit that this application is in condition for allowance. A timely notice to that effect is respectfully requested. If questions relating to patentability remain, the examiner is invited to contact the undersigned by telephone.

Please charge any unforeseen fees that may be due to Deposit Account No. 50-1147.

Respectfully submitted,



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